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MAY 15 2002

TECH CENTER 1600/2900

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MAY 10 2002

TECH CENTER 1600/2900

TCB/D  
<110> Hahn, Beatrice  
Gao, Feng  
Shaw, George

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SEQ 1

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TECH CENTER 1600/2900

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SEQ 4

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89

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SEQ 10

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SEQ 13

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SEQ 14

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SEQ 15

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SEQ 16

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SEQ 19

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SEQ 21

101

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SEQ 22

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SEQ 23

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SEQ 24

104

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SEQ 25

105

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SEQ 26

106

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SEQ 27

ION

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SEQ 28

108

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SEQ 29

109

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SEQ 31

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SEQ 33

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<210> 12

<211> 1479

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR020; gene=gag

<400> 12

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ctagaacgat	ttgcacttga	tccaggcctt	ctagaaacat	cagaaggctg	tcgaaaaata	180
ataggacagt	tacaaccatc	ccttcagaca	ggatcagaag	agctcaaadc	attatataat	240
acaatagcag	tcctctatta	tgtacatcaa	aaggtagagg	taaaagacac	caaggaggct	300
ttagagaagc	tagaggaaga	acaaaacaaa	ggtcggcaaa	agacacagca	agcgactgct	360
gaaaaagggg	tcagtcaaaa	ttaccctata	gtacagaatc	ttcagggaca	aatggtacac	420
cagtcctttat	cacctagaac	tttaaattgca	tgggtaaaagg	tgatagaaga	gaaggctttt	480
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aacaccatgt	taaatacagt	ggggggacat	caagcagcca	tgcaaattgt	aaaagacacc	600
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ccaggtcaga	taagggaacc	taggggaagt	gatatagctg	gaactactag	tacccttcag	720
gaacaaatac	aatggatgac	aggcaaccca	cctgtcccag	tgggagaaat	gtataaaaga	780
tggatcatcc	taggattaaa	taaaatagta	agaatgtata	gccctgtcgg	cattttggac	840

SEQ 34

114

G

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ataagacaag ggccaaaaga acccttttaga gactatgtag acagggttctt taaaacccta 900
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aatgcgaacc cagattgtaa gaccatttta aaagcattgg gaccaggggc tacactagag 1020
gaaatgatga cagcatgtca gggagtggga ggacctagcc ataaggcaag agttttggct 1080
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ggaaacttca tccagaacag gccagagccg tcagccccgc cagcagagag cttcaggttc 1380
ggggaggaga caaccccatc tccgaagcag gaggagaaag acgagggact gtaccctccc 1440
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<210> 13

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR020; gene=vif

<400> 13

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atggaaaaca gatggcagggt gatgattgtg tggcaggtag acaggatgag gattaacaca 60
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agacatcact ttgaaagcag gcatccaaaa ataagttcag aagtacacat cccactagag 180
acagctgaat tagtaataac aacatactgg gggctgcttc caggagaaag agaatggcat 240
ctgggtcagg gagtctccat agaatggagg caggggagggt atagaacaca aatagaccct 300
ggcctggcag accaactgat ccatatatat tattttgatt gtttttcaga atctgccata 360
aggaaagcca tattaggaca taaaattagc cctagggtgta actatcaagc aggacataac 420
aaggtaggat ctctacaata cttggcacta acagcattaa tagctccaaa aaagacaaaag 480
ccgcctttgc ctagtgtcca gaaactagta gaagacagat ggaacaagcc ccagaagacc 540
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```

<210> 14

<211> 291

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR020; gene=vpr

<400> 14

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agcttaggac aacatatcta taacacctat ggggatactt gggaaggagt tgaagcaatc 180
ataaggatat tgcaacaact actgtttatc catttcagaa ttgggtgccg tcatagcaga 240
ataggcatta ctcgacagag aagagtaaga aatggaacta gtagatccta a 291

```

<210> 15

<211> 2610

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR020; gene=tat

SEQ 35

115

G

<400> 15

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aagggttag gcataccta tggcaggaag aagcggagac agcgaccaag aactcctcaa 180
agcagtcaga tacatcaaga ttttgtacca aagcagtaag tattgttaag catatgtaat 240
gtcaaatttg ttagcaatag gcatagcagc attaatagta gcactaataa taacaatagt 300
tgtgtggact atagcatata tagaatataa gaaactggta aggcaaagaa aaataaatag 360
gttatataaa agaataagcg aaagagcaga agacagtggc aatgagagtg agggggatgc 420
agaggaattg gcagcacttg gggaagtggg gccttttatt cctggggaca ttaataatct 480
gtaatgctgc agaaaactta tgggttacag tctattatgg ggtacctgtg tggaaagaag 540
caaccactac tctattctgt gcatcagatg ctaaatcata tgaaaaagag gcacataatg 600
tctgggctac acatgcttgt gtaccacag atcccaatcc acaagaagta gttctggaaa 660
atgtaacaga aaggttttaat atgtgggaaa ataacatggg agaacaaatg catacagata 720
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<210> 16

<211> 2661

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR020; gene=rev

SEQ 36

116

G

<400> 16

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atagaatata agaaactggg aaggcaaaga aaaataaata gggttatataa aagaataagc 240
gaaagagcag aagacagtggt caatgagagt gaggggggatg cagaggaatt ggcagcactt 300
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tgcatcagat gctaaatcat atgaaaaaga ggcacataat gtctgggcta cacatgcttg 480
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gggtcaggaa ctaaagaata g 2661
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<210> 17

<211> 246

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

SEQ 37

117

G

<223> isolate=93BR020; gene=vpu

<400> 17

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gttgtgtgga ctatagcata tatagaatat aagaaactgg taaggcaaag aaaaataaat 120
aggttatata aaagaataag cgaaagagca gaagacagtg gcaatgagag tgaggggggat 180
gcagaggaat tggcagcact tggggaagtg gggcctttta ttcttgggga cattaataat 240
ctgtaa
```

<210> 18

<211> 2541

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR020; gene=env

<400> 18

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gtacctgtgt ggaaagaagc aaccactact ctattctgtg catcagatgc taaatcatat 180
gaaaaagagg cacataatgt ctgggctaca catgcttgtg taccacaga tcccaatcca 240
caagaagtag ttctggaaaa tgtaacagaa aggtttaata tgtgggaaaa taacatggta 300
gaacaaatgc atacagatat aatcagttta tgggatcaaa gcctaaagcc atgtgtgaag 360
ttaacccac tctgtgttac tttagattgt agaaacattg ccaccaatgg caccaatgac 420
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gatatagtac aaatcaacaa ggatgacaat agaacataca gactaataaa ttgtgatgcc 600
tcaaccatta cacaggcttg tccaaaggta tcttgggac caattcccat acattattgt 660
gctccagctg gttatgcat tctaaagtgt aatgagaaaa atttcacagg gacaggggtca 720
tgcaagaatg tcagtacagt acaatgtaca catggaatta aaccagtgg atccactcaa 780
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gaatttttct actgtaatac agatgaactg tttaatgaca caaaattcaa tgacacagga 1200
ttcaatggca ctatcactct cccatgtcga ataaaaacaa ttgtaaacat gtggcaggaa 1260
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SEQ 38

118

G

```

gaaggaatcg aagaaggagg tggagagcaa ggcaaagaca gatccgtgag attagtgacc 2220
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gaagctctca aatatctggg gaatctcaca cagtattggg gtcaggaact aaagaatagt 2400
gctattagct tgcttaatgc cacagcaata gcagtagctg agtggacaga tagagttata 2460
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```

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<210> 19
<211> 27
<212> DNA
<213> Human immunodeficiency virus type 1

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```

<220>
<223> isolate=93BR020; gene=nef

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```

<400> 19
atgggtggca agtgggtcaaa aagtagt 27

```

```

<210> 20
<211> 8
<212> DNA
<213> Human immunodeficiency virus type 1

```

```

<220>
<223> isolate=93BR020; gene=gag-pol fusion

```

```

<400> 20
aaaaaaaa 8

```

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<210> 21
<211> 207
<212> DNA
<213> Human immunodeficiency virus type 1

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```

<220>
<223> isolate=92NG083; gene=gag

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<400> 21
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atgaaacagt tgcaaccagc tctctag 207

```

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<210> 22
<211> 2739
<212> DNA
<213> Human immunodeficiency virus type 1

```

```

<220>
<223> isolate=92NG083; gene=pol; note=NH2-terminus
uncertain

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```

<400> 22

```

SEQ 39

119

6

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ataaatttac caggaaaatg gaaacccaaaa atgatagggg gaattggagg ttttatcaaa 60
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<210> 23

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG083; gene=vif

SEQ 40

120

G



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agacatcact atgaaagcag gcatccaaga gtaagtccag aagtacacat cccactaaga 180  
gatgctacac tagtagtaag aacatattgg ggtctgcatg caggagaaaa agactggcaa 240  
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ccacctttgc caagtgttgg gaaattagca gaagatagat ggaacaagcc ccagaagacc 540  
agggaccaca gagagaaccc tacaatgaat ggacattag 579

<210> 24  
<211> 291  
<212> DNA  
<213> Human immunodeficiency virus type 1

<220>  
<223> isolate=92NG083; gene=vpr

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ggcttaggac agtatatcta taacacttat ggggatactt ggggaaggagt tgaagccata 180  
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<210> 25  
<211> 2597  
<212> DNA  
<213> Human immunodeficiency virus type 1

<220>  
<223> isolate=92NG083; gene=tat

<400> 25  
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atacgcgctt ttctataaac ttgatgtggg accaattagt aatgggaata agactagtta 960  
taggctaata cattgtaatg tctcaacccat taacaggct tgtccaaagg taaattttga 1020

SEQ 41

121

6

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cccaattccc atacattatt gtgctccagc tggttttgcg atttttaaagt gtagggataa 1080
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taagccagtg gtatcaactc aactactgct gaatggcagc ttagcagaag aagatataag 1200
aattagatct gaaaatttca cagacaatac caaagtcata atagtgcagc ttaataatag 1260
tatagaatct aattgtatca gaccaataa caatacaaga aaaagtatac caatcggacc 1320
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acatagtttc aattgtagag gagagttttt ctattgcaat acatcaggac tgtttaataa 1560
taatattagt aatattaata atgagactat cacactccca tgtaaaataa aacaaattgt 1620
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cagatccact cgattag 2597

```

<210> 26

<211> 2663

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG083; gene=rev

<400> 26

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tctgactaat agtagcattc atagcagcca caattgtgtg gagtatagta tttatagaat 180
atagaaaaat aagaaaacag aaaaaaatag aaaagttact tgatagaata agagaaagag 240
cagaagacag tggaaatgag agtgaagggg atacagagga attggcaaca cttatggaaa 300
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tgtgtccag ctggttttgc gatttttaaag ttaggggata aggagtacaa tggaacagga 960
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SEQ 42

122

G

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agacccaata acaataacaag aaaaagtata ccaatcggac caggacaagc gttctatgca 1200
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ctcaagggac tgagactggg gtgggaaggc ctcaagtact tgtggaacct cctgttgtat 2640
tggggtcggg aactaaagaa tag 2663

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<210> 27

<211> 26

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG083; gene=vpu (defective); note=10 bp  
deletion early in vpu frameshifts, results in  
premature termination

<400> 27

tgcaggcctt agaaatatct gactaa

26

<210> 28

<211> 2550

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG083; gene=env

<400> 28

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gtacctgtgt gggaagatgc agataccccc ctattctgtg cctctgatgc taaatcatat 180

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SEQ 43

123

6

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agttctgaaa aacataatgt ctgggctaca catgcctgtg taccacaga ccctaacca 240
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gaacagatgc aggaggatat aatcagttta tgggaggaaa gcctaaagcc atgtgtaaag 360
ctaactcttc tctgtatcac tttaaactgt actaatgtaa acagtgctaa tcatactgag 420
gccataaca ctgtagaaaa caaagaagaa ataaaaaact gctctttcaa gataaccaca 480
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<210> 29

<211> 1503

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=90CR056; gene=gag; CDS:  
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<400> 29

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ctaaggccag ggggaaagaa aaaatatagg ctaaaacatc tagtatgggc aagcaggag 120
ctggaaagat ttgcacttaa ccccggcctt ttagaaacac cagaaggctg tctacagata 180

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SEQ 44

124

G

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atagaacaga tacagccagc tattaagaca ggaacagaag aacttaaadc attatttaat 240
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<210> 30

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=90CR056; gene=vif

<400> 30

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gaagctaggt tagtcataac cacatactgg ggtctgaata caggagaaag agaattggcat 240
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caggtaggaa ctctacaata cttggcatta acagcattag tggcaccaaa aaagataaag 480
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```

<210> 31

<211> 291

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=90CR056; gene=vpr

<400> 31

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SEQ 45

125

6

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gagcttttag aggagattaa gaatgaggct gttaggcatt ttcctagagt atggctccat 120
caattaggac agcatatcta taacacctat ggagatactt gggtaggagt tgaagcttta 180
ataagaacgc tgcaacaact actgtttatt catttcagaa ttgggtgcca acatagcaga 240
ataggaatta ctcgacagag aagagtaaga aatggaccca gtagatccta a 291

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<210> 32

<211> 624

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG083; gene=nef

<400> 32

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ggagcaatca caagcagcaa tacagcaacc aacaatcctg attgtgcctg gctggaagca 180
caagaggagg actcagatgt aggctttccg gtcagaccac aggtaccttt gagaccaatg 240
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ctaatttact ccaagagaag acaagacatc cttgatctat gggctctataa tacacaagga 360
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gggtggtgct tcaaactagt accaatggac ccagcagaga tagaggaagc caataaggga 480
gagaacatca gtctattaca ccccatctgc cagcatggaa tggaggatga agacagagaa 540
gtgctggtat ggagatttaa cagtagccta gcacggagac acctagcccg agagctgcat 600
ccggagtact acaaagactg ctga 624

```

<210> 33

<211> 2606

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=90CR056; gene=tat; CDS: join (5177..5391,  
7698..7782)

<400> 33

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aaaggcttag gaatttccta tggcaggaag aagcggagcc agcgacacag aactcctgca 180
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agaataggag aaagagcaga agacagtggc aacgagagtg atggagacac agaggaatta 420
tccaagctta tggagatggg gcaccttaat cttgggtatg ttgctgatct gtagtgctgc 480
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gagctttta atgtgggaaa ataacatggt ggagcagatg catacagaca taatcagttt 720
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tactaatgtc agaaacaata cctctaacag cactagcagt atggaggcag gaggggaact 840
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aaattgtaat acctcagtca ttacacaggc ttgccc aaag gtgtcctttg aacctattcc 1020
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SEQ 46

124

G

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taattgtaga	ggagaatttt	tctattgcaa	tacatcaggg	ctgtttaata	gtagttggga	1560
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<210> 34

<211> 2657

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=90CR056; gene=rev; CDS: join(5316..5391,  
7698..7972)

<400> 34

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cgctagtagt	aacatttatc	atagccgtaa	ttgtgtggac	catagtatat	atagaatata	180
aaaaattgg	aaggcaaaag	aaaatagaca	ggctaattga	aagaatagga	gaaagagcag	240
aagacagtgg	caacgagagt	gatggagaca	cagaggaatt	atccaagctt	atggagatgg	300
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gtatattatg	gggtacctgt	gtggaaagag	gcaaaaacca	ctctattctg	tgcatacagat	420
gctaaggcat	atgagacaga	aaagcataat	gtctgggcta	cacatgcatg	tgtaccacaca	480
gaccccaacc	cacaagagat	ggtcatggag	aatgtaacag	agagctttta	tatgtgggaa	540
aataacatgg	tgagcagat	gcatacagac	ataatcagtt	tatgggatca	aagcttgaaa	600
ccatgtgtaa	aattaacccc	actctgtgtt	actctaaact	gtactaatgt	cagaaacaat	660
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gctggctttg	cgattctaaa	gtgtaacaat	aaaacattca	atggaacagg	attatgtaca	960
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SEQ 47

127

6

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aacatgtggc	agagagtagg	acgagcaatg	tatgcccctc	ccatccaagg	aaacattatg	1560
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<210> 35  
 <211> 243  
 <212> DNA  
 <213> Human immunodeficiency virus type 1

<220>  
 <223> isolate=90CR056; gene=vpv

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ctaattgaaa	gaataggaga aagagcagaa gacagtggca acgagagtga tggagacaca 180
gaggaattat	ccaagcttat ggagatgggg caccttaatc ttgggtatgt tgctgatctg 240
tag	243

<210> 36  
 <211> 2538  
 <212> DNA  
 <213> Human immunodeficiency virus type 1

<220>  
 <223> isolate=90CR056; gene=env

<400> 36	
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SEQ 48

128

G



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ttgctgatct gtagtgctgc acaaaacttg tggggttacag tatattatgg ggtacctgtg 120
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aagcataatg tctgggctac acatgcatgt gtaccacag accccaaccc acaagagatg 240
gtcatggaga atgtaacaga gagctttaat atgtgggaaa ataacatggt ggagcagatg 300
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ctctgtgtta ctctaaactg tactaatgtc agaaacaata cctctaacag cactagcagt 420
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gaaaacatta cactgccatg cagaataaaa caaattgtaa acatgtggca gagagttaga 1260
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gaaagaagct tgctataa 2538

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<210> 37

<211> 621

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=90CR056; gene=nef

<400> 37

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atgggaggca aatggtcaaa aagtaggatg ggtgggtggt ctactataag ggaaagaatg 60
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SEQ 49

129

9

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ggggcagtc caattaataa tacagcatct actaatcgtg atgccgcctg gctggaagca 180
caagaggacg gggaggaagt aggcctttcca gtcaggcctc aggtaccttt aagaccaatg 240
acctataagg gagcttttga tctcagccat tttttaaaag aaaagggggg actggatggg 300
ttaatttact ccaagcaaa acaggacatc cttgatttat gggctctataa cacacaaggc 360
tacttccttg actggcagaa ctacacacca gggccagggg agagatttcc cctgaccttt 420
gggtgggtgct tcaagctagt accagtaaat ccacaggagg tagaacaggc caatgaagga 480
gagaacaaca gcttgctaca ccccatgagc ctgcatggaa tggaggatga cgggagagaa 540
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ccggagtaca aagactgctg a

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<210> 38

<211> 1486

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=gag

<400> 38

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<210> 39

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=vif

<400> 39

SEQ 50

130

9

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agacatcatt atgaaagcag acatccaaaa ataagttcag aagtacacat cccattagggt 180
gaagctagat tagtaataaa aacatattgg gggttgcaaa caggggaaaag agattggcat 240
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ggcctggcag gccaaactaat ccatatgcat tattttgatt gttttgcaga ctctgccata 360
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aaggtaggat ctctacaata cttggcactg acagcattga taaaaccaa aaagataaag 480
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aggggccgca gaggggaacca tacaatgaat ggacactag 579

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<210> 40

<211> 291

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=vpr

<400> 40

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gacttaggac aatataatcta tgaaacctat ggggatactt ggaggggagt agaagctata 180
ataagaattc tgcaacaact actgtttatc catttcagaa ttgggtgccg gcatagcaga 240
ataggcattt tgcaacagag aagagcaaga aatggagcca gtagatccta a 291

```

<210> 41

<211> 2640

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=tat

<400> 41

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aaaggcttag gcatttccta tggcaggaag aagcggagac agcgacgaaa cgctcctcca 180
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SEQ 51

131

6

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<210> 42

<211> 2658

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=rev

<400> 42

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agagaaagag	cagaagatag	tggcaatgag	agtgatgggg	acattgatga	attatcaaaa	300
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SEQ 52

132

Q

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<210> 43

<211> 246

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=vpu

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aggtttaatta	agaaaataag	agaaagagca	gaagatagtg	gcaatgagag	tgatggggac	180
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<210> 44

<211> 2583

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=env

<400> 44

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ttggggatgt	taacaatttg	tagtgctgca	aacaacttgt	gggttactgt	ctactatggg	120
gtacctgtgt	ggaaagacgc	agagaccacc	ttattttgtg	catcagatgc	taaagcatat	180

SEQ 53

133

67

gatccagaaa	agcataatgt	ctgggctaca	catgcctgtg	tacccataga	ccccgaccca	240
caagaaatac	atttggaaaa	tgtgacagaa	gagtttaaca	tgtggaaaaa	taacatggta	300
gagcagatgc	atacagatat	aatcagtcct	tgggaccaa	gcctaaagcc	atgtgtaaag	360
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<210> 45

<211> 624

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; gene=nef

<400> 45

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ggggcactta	caagtagcaa	cacacccagc	aacaatgctg	attgtgcctg	gctggcagca	180

SEQ 54

134

9

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caagaggagg aaaacgaagt aggcctttcca gtcagacctc aggtgccttt aagaccaatg 240
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<210> 46

<211> 8

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92RW009; standard name=3' LTR repeat  
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beyond end of this

<400> 46

aaaaaaaa

8

<210> 47

<211> 1494

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=gag

<400> 47

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SEQ 55

135

Q

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<210> 48

<211> 4307

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=gag-pol fusion

<400> 48

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ctggagagat ttgcacttaa ccctgacctc ttagaaacaa cagaagggtg tcagcaaata 180  
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tccatcctga caaatggacg gtacaaccta tacagctgcc aaacaaagaa agctggactg 2520

SEQ 56

134

G



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<210> 49

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=vif

<400> 49

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gaggctagat	tagtagtaag	aacatatttg	ggtctgcata	caggagaaaag	agactggcac	240
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gacctagcag	accaactgat	tcacctgcat	tattttaact	gttttttcaga	atcggccgta	360
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caggtaggat	ctactacaata	tttagcactc	aaagcattag	taacaccaac	acagacaaag	480
ccacctttac	ctagtgttaa	gaagttaaca	gaagatagat	ggaacgagcc	ccagaagacc	540
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<210> 50

<211> 114

<212> DNA

SEQ 57

137

G

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=vpr

<400> 50

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<210> 51

<211> 2579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=tat

<400> 51

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aagggcctag gcatctccta tggcaggaag aagcggagac gccgacgagg aactcctcag 180
agtcaccagg atcatcaaaa tcctgtacca aagcagtgag tagtaatagt tagtatatgt 240
gatgcaatcc ttgaaaatag ctgcaatagc aggactagta gtagcagcca tagcagccat 300
agttgtgtgg accatagaaa aataaagaaa caggagaaaa tagacagggt acttgataga 360
ataagagaaa gagcagaaga tagtggcaat gagagtgaag gggacacaga ggaattggca 420
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SEQ 58

138

G

ttggaacact	agttggagta	ataaatctta	tgaggagatt	tgggataaca	tgacctggat	2220
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gcagaaccag	caggaaaaga	atgaacaaga	cttattggca	tgggacaagt	gggcaagttt	2340
gtggaactgg	tttgacataa	caaaatggct	atggtatata	aaaatattta	taatgatagt	2400
aggaggttta	ataggtttta	gaatagtttt	tgctgtgctt	tctatagtaa	atagagttag	2460
gcagggatac	tcacctttgt	cattccagac	ccttaccac	caccagaggg	aacccgacag	2520
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<210> 52

<211> 2645

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=rev

<400> 52

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gctgcaatag	caggactagt	agtagcagcc	atagcagcca	tagttgtgtg	gaccatagaa	180
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cccaaccac	aagagataac	tctggaaaat	gtaacagaaa	cttttaacat	gtggaaaaat	540
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agcaattaca	cacaacaaat	atacagccta	attgaagaat	cgcagaacca	gcaggaaaag	2160
aatgaacaag	acttattggc	attggacaag	tgggcaagtt	tgtggaactg	gtttgacata	2220

SEQ 59

139

G

acaaaatggc	tatggtatat	aaaaatattt	ataatgatag	taggaggttt	aatagggtta	2280
agaatagttt	ttgctgtgct	ttctatagta	aatagagtta	ggcagggata	ctcacctttg	2340
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<210> 53

<211> 230

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=vpu

<400> 53

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taagagaaaag	agcagaagat	agtggcaatg	agagtgaagg	ggacacagag	gaattggcaa	180
cacttgtgga	catggtggac	tttgatcctt	gggttgggtga	taattttag		230

<210> 54

<211> 2538

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=env

<400> 54

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caagagataa	ctctggaaaa	tgtaacagaa	acttttaaca	tgtggaaaaa	taacatggta	300
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ccacttccca	tacattattg	tgctccagct	gggtttgcga	ttttaagtg	taggggtgtaag	720
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aagataaaac	aaattgtgag	aatgtggcag	agagtgggac	aagcaatgta	tgccctctcc	1260
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SEQ 60

140

9

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accaaggcaa ggagaagagt ggtggagaga ggaaaaaggg cagttggact gggagctgtc 1500
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gaaagagctt tgctataa 2538

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<210> 55

<211> 621

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=92NG003; gene=nef

<400> 55

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gagtactata aggactgctg a 621

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<210> 56

<211> 1438

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=gag

<400> 56

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SEQ 61

141

G

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cacaagggaa ggccagggaa tttccttcag agcagaccag agccaacagc cccaccagca 1380
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<210> 57

<211> 3012

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=pol; note=NH2-terminus  
uncertain

<400> 57

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ctctcagaaa caggagccga tagacaagga gatgtatcct ttggcttccc tcagatcact 180
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gataccggag cagatgatac agtattagaa gaaataaatt taccaggaag atggaaacca 300
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SEQ 62

142

G

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tataaaaatt	tgaaaacagg	aaagtatgca	aggatgaggg	gtgcccacac	taatgatgta	1560
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gaaggggcag	tagtaataca	agataaatgt	gacataaaaag	tagtgccaag	aagaaaagta	2940
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<210> 58

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=vif

<400> 58

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agacatcact	ttgaaagcag	gcatccaaga	gtaagttcag	aagtacatat	cccactagag	180
gaagctaaat	tagtaataac	aacatattgg	gggctgcata	caggagaaaag	agattggcat	240
ctgggtcagg	gagtctccat	agaatggagg	caggggaggt	ataggacaca	aatagaccct	300
ggcctggcag	accaaactgat	ccatatatat	tatttttgatt	gtttttcaga	atctgccata	360
aggaaaagcca	tattaggaca	tagaattagc	cctagggtgtg	attatcaagc	aggacataac	420
aaggtaggat	ctctacagta	cttggcacta	acagcattaa	taaaaccaa	aaagagaaaag	480
ccacctttgc	ccagtgttaa	gaaactgaca	gaggatagat	ggaacaagcc	ccagaagacc	540
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<210> 59

<211> 291

<212> DNA

SEQ 63

143

Q

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=vpr

<400> 59

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ataagaattc tgcaacaact gctgtttatt catttcagaa ttggatgtca acatagcaga 240
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<210> 60

<211> 2601

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=tat

<400> 60

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aagggttag gcatctccta tggcaggaag aagcggagac agcgacacag aactcctcaa 180
agcagtcagc tacatcaaga tctgtacca aagcagtaag tattgttaag taatatatgt 240
aatgtcatat ttgttagtaa taggttttagc agcattaata gcagcactaa taatagcaat 300
agttgtgtgg actatagcat atatagaata tagggaacta gtaaggcaaa gaaaaataaa 360
taggttatat aaaagaataa gagaaagagc agaagacagt ggcaatgaga gtgaggggga 420
tgcagaggaa ttggcagcac ttggggaaat ggggcctttt attcctgggg atattgataa 480
tctgtaatgc tgaaaacttg tgggtcacag tctattatgg ggtacctgtg tggaaagaag 540
caaccactac tttattctgt gcatcagatg ctaaagcata tgaaaaagaa gcacataatg 600
tctgggctac acatgcctgt gtaccacacag atcccaatcc acaagaagta gttctggaaa 660
atgtaacaga aaattttgat atgtggaaaa ataacatggt agaacaaatg catacagata 720
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aggcaaaaag acaagtgggtg aagagagaaa aaagagcagt ggggaatggga gctttgttcc 1920
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SEQ 64

144

G



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aggccagaca attattgtct ggcatagtcg aacagcagaa taatttgctg agggctattg 2040
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gcttcccaag cccaaggga cccgacaggc ccgaaggaa cgaagaagga ggtggagagc 2580
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2601

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<210> 61

<211> 2652

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=rev

<400> 61

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agagaaagag cagaagacag tggcaatgag agtgaggggg atgcagagga attggcagca 300
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tatgtggaaa aataacatgg tagaacaat gcatacagat ataatcagtt tatgggatca 600
aagcctgaag ccatgtgtga agttaacccc actctgtgtt actttacgtt gtagtaatgc 660
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SEQ 65

145

6

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<210> 62

<211> 2529

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=env

<400> 62

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agtaacaaat	ctcaggagaa	gatctggggg	aacatgacct	ggatggagtg	ggaaaaagag	1860
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SEQ 66

146

6

aagaatgaac	aagaattatt	ggcattggac	aaatgggcaa	gtctgtggaa	ttggtttgac	1980
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gaaggagggtg	gagagccagg	caaagacaga	tccgtgagat	tagtgaacgg	attcttagct	2220
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<210> 63

<211> 621

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=93BR029; gene=nef

<400> 63

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<210> 64

<211> 1503

<212> DNA

<213> Human immunodeficiency virus type 1

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<400> 64

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SEQ 67

147

6

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<210> 65

<211> 3009

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CT032.3; gene=pol

<400> 65

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SEQ 68

148

G

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<210> 66

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CT032.3; gene=vif

<400> 66

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<210> 67

<211> 288

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY032.3; gene=vpr

<400> 67

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SEQ 69

149

9

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<210> 68

<211> 2643

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CT032.3; gene=tat

<400> 68

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SEQ 70

150

9

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<210> 69

<211> 2688

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CT032.3; gene=rev

<400> 69

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SEQ 71

151

Q

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<210> 70

<211> 246

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CT032.3; gene=vpu

<400> 70

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<210> 71

<211> 2571

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY032.3; gene=env

<400> 71

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gagaaagaag tacataatat ctgggctaca catgcctgtg taccacaga cccaaccca 240
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SEQ 72

152

6



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<210> 72

<211> 660

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> nef

<400> 72

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<210> 73

<211> 1485

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM651.8; gene=gag

<400> 73

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ctggaaagat ttgcgttaa ccctggcctt ttagaaacat cagaaggctg taaacaaata 180
atgaaacagc tacaaccagc tcttcagaca ggaacggagg aacttagatc attatacaac 240
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SEQ 73

153

6

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<210> 74

<211> 3000

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM651.8; gene=pol

<400> 74

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ccccttgtct	caataaaggt	agggggccaa	ataaaggagg	ctctcttaga	cacgggagca	240
ggtgatacag	tattagaaga	aataaatttg	ccaggcaa	ggaaaccaa	aatgatagga	300
ggaattggag	gctttatcga	agtaagacaa	tatgatcaaa	tacctatgga	aatttgtgga	360
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SEQ 74

154

G

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<210> 75

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM651.8; gene=vif

<400> 75

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aaggtaggat ctctgcaata cttggcactg acagcattga taaaaccaa aaagagaaag 480
ccacctctgc ctagtgtagt gaaattagta gaggatagat ggaacaattc ccagaagacc 540
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<210> 76

<211> 291

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM651.8; gene=vpr

SEQ 75

155 6

<400> 76

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agcttaggac aacatatcta tgaaacttat ggggatactt ggactggagt cgaggctata 180
ataagaatac tgcaacaact actgtttatt catttcagaa ttgggtgccca gcacagcaga 240
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<210> 77

<211> 2666

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM651.8; gene=tat

<400> 77

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SEQ 76

156 6

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<210> 78

<211> 2684

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM651.8; gene=rev

<400> 78

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SEQ 77

157

G

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<210> 79

<211> 261

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM651.8; gene=vpu

<400> 79

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<210> 80

<211> 2607

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM651.8; gene=env

<400> 80

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gtacctgtgt ggaaagaagc aaaaactact ctattctgtg catcagatgc taaatcatat 180
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SEQ 78

158

G

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<210> 81  
<211> 621  
<212> DNA  
<213> Human immunodeficiency virus type 1

<220>  
<223> nef

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caagaggagg aagaagttgg ctttccagtc agacctcagg tgcctttaag accaatgact 240
tataaggcag cagtcgatct cagcttcttt taaaagaaa aggggggact ggaagggtta 300
atttactcta agaaaaggca agaaatcctt gatttgtggg tctatcacac acaaggcttc 360
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tggtgcttca agctagtgcc agttgatcca ggggaagtag aagaggccaa cgaaggagaa 480
aacaactgtc tgctacaccc tatgagccag caaggaatgg atgatgatca cagagaagta 540
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<210> 82  
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<212> DNA  
<213> Human immunodeficiency virus type 1

<220>  
<223> isolate=96ZM751.3; gene=gag

159

G

<400> 82

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atacaacagc tacaaccagc tctccagaca ggaacagagg aacttaggtc attatataat 240
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gcaccaggcc aaataagaga accaagggga agtgacatag caggaactac tggtagcctt 720
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<210> 83

<211> 3017

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96AM751.3; gene=pol

<400> 83

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ctcttgata caggagcaga tgatacagta ttagaagaaa taaatttgcc aggaaaatgg 300
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cttatagaaa tttgtggaaa aaaggctata ggtacagtat tagtaggacc tacacctgtc 420
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cctattgaaa ctgtaccagt aaaattaaag ccaggaatgg atggcccaag ggtcaaacia 540
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SEQ 80

160

G



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<210> 84

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM751.3; gene=vif

<400> 84

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aaggtaggat	ccctacaata	cttggcactg	acagcattga	taaaacccaa	aaagataaag	480
ccacctttac	ctagtgttag	gaaattagta	gaggatagat	ggaacaagcc	ccagaaaacc	540
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SEQ 81

149

6

<210> 85  
<211> 291  
<212> DNA  
<213> Human immunodeficiency virus type 1

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<210> 86  
<211> 2646  
<212> DNA  
<213> Human immunodeficiency virus type 1

<220>  
<223> isolate=96AM751.3; gene=tat

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SEQ 82

1102

Q

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<210> 87

<211> 2631

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96ZM751.3; gene=rev

<400> 87

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aacacgtgat	ggagggacaa	atgacacaga	gacaccagag	acattcagac	ctggaggagg	1680
agacatgaag	gacaattgga	gaagtgaatt	atataaatat	aaagtggtag	aaattaagcc	1740

SEQ 83

163

G

```

attaggagta gcacccacta aggcacgaag gagagtgggtg gagagagaaa aaagagcagt 1800
aggaatagga gctgtgttcc ttgggttctt gggagcagca ggaagcacta tgggcgcagc 1860
atcaataacg ctgacggtac aggtcagaca attattgtct ggtatagtgc aacagcaaag 1920
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agcacttgtc tgggacgacc tccggagcct gtgccttttc agctaccacc gcttgagaga 2580
cttcatattg attgcagcga ggggactaca gaggggtgg gaaactctta a 2631

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<210> 88

<211> 261

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96AM751.3; gene=vpu

<400> 88

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ctaatacatag caatagctgt gtggatcata gtatatatag aatatagaaa attgtcaaga 120
caaagaaaaa tagaccgggt aattaaaaga attagagaaa gggcagaaga cagtggcaat 180
gagagtgaag gggataatga ggaattggca acaatggtgg atatggggca tcttaggctt 240
ttgatgcta ttgatgtgta a 261

```

<210> 89

<211> 2544

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96AM751.3; gene=env

<400> 89

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ttttggatgc tattgatgtg taatgcaatg gggaaattgt gggtcacagt ctactatggg 120
gtacctgtgt ggaaagaagc aaaaactact ttattttgtg catcagatgc taaagcatat 180
gagacagaag tgcataatgt ttgggtctaca catgcctgtg taccacaga cccaaccca 240
caagaaatgg ttttggaaaa tgtaacagaa aagtttaaca tgtgggaaaa taacatggtg 300
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accaacaatg ctaataatac caactataat aatgaaactg acatgagaaa ttgctctttc 480
aatataacca cagaattaag agataagagg aggcaagtag atgcactctt ttataaactt 540
gatatagtac caattaatga gaattccagt gaatatagat taataaattg taatacctcg 600
gccataacac aagcatgtcc aaaggttact tttgaccaa tccctataca ttattgtgct 660
ccagctgggt atgcgattct aaagtgtaac aataagacat tcaatggaac aggaccatgc 720
aataatgtca gcacagtaca atgtacacat ggaattaagc cagtagtatc aactcaatta 780
ctgttaaattg gtagtctagc agaagaagag ataataatta gatctaaaaa tatgacagac 840

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SEQ 84

1104

6

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aatgccaaaa taataatagt acatcttaat gaatctgtag aaattgtgtg tacaagaccc 900
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aatgatagaa gtaattcgac cattacgctt caatgcagaa taaaacaaat tacaacatg 1260
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gagacattca gacctggagg aggagacatg aaggacaatt ggagaagtga attatataaa 1440
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agtgtatta gtttgcttga tactatagca atagcagtag ctgaagggaac agatagaatt 2460
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ggctttgaag cagctttgca ataa 2544

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<210> 90

<211> 624

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=96AM751.3; gene=nef

<400> 90

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atgggaggga agtgggtcaaa acgcagtata gttggatggc ctaaagtaag agaaagaata 60
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ggggcactta caagcagtaa cacaagtacc aataatgctg attgtgcctg gctggaagcg 180
caagaggagg agggagaagt aggcctttcca gtcagacctc aggtaccttt aagaccaatg 240
acttataagt cagcatttga tctcagcttc tttttaaaag aaaagggggg actggatggg 300
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tacttccttg attggcaaaa ctatacccg ggaccaggga tcagatatcc actgaccttt 420
ggatgggtgct acaagctagt gccagttgac ccaagggaag tagaagaagc caacgaagga 480
gaggacaact gtttgctaca ccctataagc cagcatggaa tagaagatga agacagagaa 540
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ccggagtatt acaaagactg ctga 624

```

<210> 91

<211> 1491

<212> DNA

SEQ 85

1405

G

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=gag

<400> 91

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ctggagaaat tctcaattaa ccctggcctt ttagaaacac cagagggatg tagacaaata 180
ataaggcagt tacaaccagc tctccaaaca ggaacagaag aacttaaadc attatataat 240
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caggctatat cacctaggac gttgaatgcc tgggtcaaag tagtagaaga aaaggctttc 480
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aatactatgc taaacacagt ggggggacat caagcagcta tgcaaatgtt aaaagatacc 600
atcaatgagg aagctgcaga atgggacagg gtacatccag tacatgcagg gcctattcca 660
ccaggccaga tgagagaacc aaggggaagt gacatagcag gaactactag tacccttcag 720
gaacaaatag gttggatgac cagcgtacca cccatcccag tgggagaaat ttataaaaaga 780
tgataatcc tgggattaaa taaaatagta agaattgata gccctgtcag cattttggac 840
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<210> 92

<211> 3012

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=pol

<400> 92

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cctgaagcag gaactggaga ccagggaacc atacaatcct gcaatttccc tcaaatcact 180
ctttggcaac gaccccttgt tacagtaaag atagagggac agctaaaaga agctctatta 240
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gaaatttgtg gaaaaagggc cataggtaca gtattagtag gacctacccc tgtcaacata 420
atcggaagaa atatgttggc tcagcttggc tgtactttaa attttccaat tagtcctatt 480
gaaactgtac cagtaaaatt aaagccagga atggatgggc caaagggtta acaatggcca 540
ttgacagaag aaaaaataaa agcattaaca gaaatctgta aagaaatgga aaaggaagga 600
aaaatttcaa aaattgggcc tgaaaaatcca tacaacactc cagtgtttgc tataaagaaa 660
aaagacagca ctaaatggag aaaattagta gattttagag aactcaataa gagaactcaa 720
gacttctggg aagttcagtt aggaatacca catccagcag gattaaaaaa gaaaaaagca 780
```

SEQ 86

1164

6

gtaacagtac	ttgatgtggg	ggacgcatat	ttttccgttc	ccttacatga	agacttcaga	840
aaatatactg	cattcaccat	acctagtacc	aacaatgaga	caccaggagt	taggtatcag	900
tacaatgtac	ttccacaggg	atggaaagga	tcaccagcaa	tattccagag	tagcatgaca	960
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agggtcact	tattgaaatg	gggattttat	acaccagaca	aaaaacatca	gaaagaacct	1140
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<210> 93

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=vif

<400> 93

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ttgggtcatg	gagtcctccat	agaatggagg	caaaacaggt	atcatacaca	aatagacct	300
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SEQ 87

167

67

```

aggaaagcca taataggaga aatagttagt cctaggtgtg aatatcaagc aggacataac 420
aaggtagggt ctctgcaata tttggcattg aaagcagtag tagcttcaac aaggacaaag 480
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<210> 94

<211> 291

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=vpr

<400> 94

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ataagatatc tgcaacaact actgtttgtc catttcagaa ttgggtgcca acatagcagg 240
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<210> 95

<211> 2655

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=tat

<400> 95

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SEQ 88

168

67



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acaaatgggc	agatttgtgg	agttggttca	acatttcaca	ctggctgtgg	tatataagaa	2460
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tagtaaatag	agttaggcag	ggatactcac	ctgtgtcatt	tcagatccct	acccaagcc	2580
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<210> 96

<211> 2721

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=rev

<400> 96

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ttggcaatag	taggactgat	agtagcttta	atcttagcaa	tagttgtatg	gactatagta	180
ttcatagaat	ataagaaaaa	taagaagcaa	agggaaaatag	actggttaat	caaaaagata	240
agtgcagagag	cagaagacag	tggcaatgag	agtgatgggg	acacagagga	actatcagca	300
cttgtgggaga	gggggcatct	tgattttggg	gatgttaata	atgtgtaaa	ctacagattt	360
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tgcacagat	gctaaagcat	atgatacaga	agtgcataat	gtatgggcca	cacatgcctg	480
tgtaccaca	gacccaacc	cacaagaaat	aaacctggaa	aatgtaacag	aaaattttta	540
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agcacattgt	aatatcaaca	aaacattatg	gaatgacact	ttacaaaagg	tagctgaaca	1320
attaagagag	aaattcccta	agaaaacat	aatctttact	aactcctcag	gaggggaccc	1380
agaaattaca	acacttagtt	ttaattgtgc	aggagaattt	ttctattgca	atacaacagg	1440

SEQ 89

149

67

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cctgtttaat ggtacgtggt ggaacaatgg tacgtggaac gggccctaca cacctaataa 1500
caccaatgga agtataatcc tcccatgcag aataaaacaa attataaaca tgtggcagag 1560
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caagggactg agactggggt gggaagggtct caagaatctg tggaatcttc tgttatactg 2700
gggtcgggaa ctgaagaata g 2721

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<210> 97

<211> 246

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=vpu

<400> 97

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atgttacctt tagtaatatt ggcaatagta ggactgatag tagctttaat cttagcaata 60
gttgtagtga ctatagtatt catagaatat aagaaaatta agaagcaaag gaaaatagac 120
tggttaatca aaagaataag tgagagagca gaagacagtg gcaatgagag tgatggggac 180
acagaggaac tatcagcact tgtggagagg gggcatcttg attttgggga tgttaataat 240
gtgttaa 246

```

<210> 98

<211> 2598

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=env

<400> 98

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atgagagtga tggggacaca gaggaactat cagcacttgt ggagaggggg catcttgatt 60
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cctgtgtgga aagatgcaga taccatccta ttttgtgcat cagatgctaa agcatatgat 180
acagaagtgc ataatgtatg ggccacacat gcctgtgtac ccacagaccc caaccacaa 240
gaaataaacc tggaaaatgt aacagaaaat tttaatatgt ggaaaaataa catggtagag 300
cagatgcaag aagatataat cagcttatgg gatcaaagcc taaagccatg tgtaaaatta 360
accccgctct gcgtcathtt aaattgtagc aatgccaaata ccagcaccca tagcaatagc 420

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SEQ 90

170

67

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agtagcacc agagcccat taatgaagaa ataaaaaact gctcttaca tactaccaca 480
atactaagag ataagacaca aaaagtttat tcaactgttt atagacttga tgtagtaca 540
cttgatgaaa gtgaaaataa gaatacatca ggtagtaata ctctgtatag actaataaat 600
tgtaatacct caaccatcac acaagcgtgt ccaaaggtaa cctttgagcc aattcctata 660
cattattgtg cccagctgg ttttgcgatt ctaaagtgt aggatccgag attcaatgga 720
acagggtcac gcaagaatgt tagctcagta caatgtacac atggaattaa accagtagca 780
tcaactcaac tgctgttgaa tggcagtcga gcagaaggag ggaaaataat gattagatct 840
gaaaatatta caaacaatgc caaaaacata atagttcagt ttactaagcc tgtactaatt 900
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ttctatacaa atgaaataat aggggacata agacaagcac attgtaatat caacaaaaca 1020
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gaaagggctt tactataa 2598

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<210> 99

<211> 654

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94CY017.41; gene=nef

<400> 99

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ggagcagtg ctcaagattt agctactcat ggagcagtc caagcagtaa tacagcagct 180
actaatcctg attgcgcctg ggtggaagcg caagaagagg agagtgaagt aggcttccca 240
gtcaggccac aggtaccttt aaggccaatg accttcaagg gagcgtttga tctcagcttc 300
tttttaaaag aaaagggggg actggatggg ttaatttact cccagaaaag acaagacatc 360
cttgatatgt gggcttacca cacacaaggc tacttcctg attggcagaa ttacacacca 420

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SEQ 91

171

6

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gggccagggg tcagataccc attaacatth ggatgggtgct tcaagctagt accagtagag 480
ccatctgagg tagaagaagc tactcagggg gagaacaaca gcttattaca ccctatatgc 540
caacatggag tagatgaccc tgaaagagaa gtgttaagat gggagtttga tagaagcctg 600
gcacggagac acagagcccc agagctgcat ccggagtact acaaagactg ctga 654

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<210> 100

<211> 1476

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94IN476.104; gene=gag

<400> 100

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ctggaaagat ttgcgcttaa ccctggcctt ttagagacgt cagacggatg taaacaaata 180
ataaaacagc tacatccagc tcttaagaca ggaacagagg aacttaggtc attattcaac 240
acagtagcaa ctctctattg tgtacatgca gggatagagg tacgagacac caaggaagcc 300
ttagacaaga tagaggaaga acaaaacaaa agtcagcaaa aaatacagca ggcaaaagag 360
gctgacggaa aggtcagttca aaattatcct atagtgcata atctccaagg gcaaatggta 420
caccagcccc tatcacctag aactttgaat gcggtggtaa aagtaataga ggagaaggct 480
tttagccag aggtaatacc catgttcaca gcattatcag aaggagccac cccctctgat 540
ttaaacacca tgttaaatac agtgggggga catcaagcag ccatgcaaat gttaaagat 600
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aaggagacaa cccccgctcc gaagcaggag tcgaaagaca gggaaccctt aacttccttc 1440
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<210> 101

<211> 3011

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94IN476.104; gene=pol

<400> 101

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gccagagcca acagccccac cagcagagag cttcagggtt aaggagacaa cccccgctcc 120
gaagcaggag tcgaaagaca gggaaccctt aacttccttc aaatcactct ttggcagcga 180
ccccttgtct caataaaagt agggggccag ataaagggaag ctctcttaga cacaggagca 240
gatgatacag tattagaaga aatagctttg ccaggaagat ggaaacccaa aatgatagga 300

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SEQ 92

172

G

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ggaattggag gttttatcaa agtaagacag tatgatcaaa tacttataga aatttgtgga 360
aaaaaggcta taggtacagt attagtagga cctacacctg tcaacataat tggaagagat 420
atgttgactc agcttggatg cactctaaat ttccaatta gcccattga aactgtacca 480
gtaaaattaa agccaggaat ggatggccca aagggttaaac agtggccatt gacagaagag 540
aaaaataaag cattaacaga aatttgtaaa gaaatggaga aggaaggaaa aattacaaaa 600
attgggcctg aaaatccata taacactcca gtatttgcca taaaaaggaa ggacagtact 660
aagtggagaa aattagtaga tttcagggag ctcaataaaa gaactcaaga cttttgggaa 720
gttcaattag gaataccaca cccagcaggt ttaaaaaaga aaaaatcagt gacagtactg 780
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taatacaaga taatagtgc ataaaggtag tgccaaggag gaaagcaaaa attattaggg 2940
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acatggaata g 3011

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<210> 102

<211> 579

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94IN476.104; gene=vif

SEQ 93

173

9

<400> 102  
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agacatcatt atgaaagcag acatccaaaa gtaagtgcag aagtacacat cccattagga 180  
gatgctagat tagtaataaa aacatattgg ggtttacaaa caggagaaaag agattggcat 240  
ttgggtcatg gcgtctccat agaattggaga ttgggaagat atagcacaca agtagaacct 300  
ggcctggcag accagctaata ccatatgcat tattttgatt gttttgcaga ctctgccata 360  
agaaaagcca tattaggaca catagtattt tctaggtgtg attatcaagc aggacataat 420  
aaggtaggat ctctacaata cttggcactg acagcattga taaaaccaa aaagagaaaag 480  
ccacctctgc ctagtggttaa gaaattagta gaggatagat ggaacaatcc ccagaagacc 540  
agggaccaca gagggaaaca tacaatgaat ggacactag 579

<210> 103  
<211> 291  
<212> DNA  
<213> Human immunodeficiency virus type 1

<220>  
<223> isolate=94IN476.104; gene=vpr

<400> 103  
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agcttaggac aatatatcta tgaacatat ggggatgctt ggacaggagt cgaagcttta 180  
ataagaacac tgcaacaatt actgtttatt catttcagaa ttgggtgccg gcatagcaga 240  
ataggcattt tacaacggag aagagcaaga aatggagcca gtagatccta a 291

<210> 104  
<211> 2633  
<212> DNA  
<213> Human immunodeficiency virus type 1

<220>  
<223> isolate=94IN476.104; gene=tat

<400> 104  
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aaaggcttag gcatttccta tggcaggaag aagcggagac agcgacgcag cgctcctcca 180  
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aacaggttaa ttgaaagaat tagggaaaga gtagaagaca gtggcaatga gagtggggg 420  
gatactgagg aattgtcaac actggtggat atggggaatc ttaggctttt ggatgctaata 480  
gatttataat gtagtaggga acttggtggg cactgtctat tatgggggtac ctgtgtggaa 540  
agaagcaaaa actactttat tctgtgcac agatgctaaa gcttatgaga aggaggtgca 600  
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SEQ 94

174

G

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<210> 105

<211> 2651

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94IN476.104; gene=rev

<400> 105

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gattaggagt aggagcatta atagtagcat taatcttagc aataattgtg tggaccatag 180
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SEQ 95

175

G

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gaagccctta a 2651

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<210> 106

<211> 261

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94IN476.104; gene=vpu

<400> 106

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caaagaaaaa taaacagggt aattgaaaga attagggaaa gagtagaaga cagtggcaat 180
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```

<210> 107

<211> 2574

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94IN476.104; gene=env

<400> 107

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SEQ 96

176

G



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<210> 108

<211> 624

<212> DNA

<213> Human immunodeficiency virus type 1

<220>

<223> isolate=94IN476.104; gene=nef

<400> 108

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SEQ 97

177

6

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 ccggagtatt acaaagactg ctga 624

<210> 109  
 <211> 17  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> Upstream primer UP1A spanning tRNA primer binding state

<400> 109  
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<210> 110  
 <211> 22  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> Downstream primer Low2 spanning the R/U5 junction in the  
 3' long terminal repeat

<400> 110  
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<210> 111  
 <211> 28  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> Upstream UP1AMlul primer containing Mlul restriction site

<400> 111  
 tctctacgcg tggcgcccga acagggac 28

<210> 112  
 <211> 35  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> Downstream Low1Mlul primer containing Mlul restriction site

<400> 112  
 accagacgcg tacaacagac gggcacacac tactt 35

SEQ 98

178 6